AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A router, comprising:

a content addressable memory which stores Internet Protocol address prefixes in an order independent of lengths of the Internet Protocol address prefixes, wherein new entries are stored in the content addressable memory in random order; and

an encoder coupled to the content addressable memory which stores a plurality of codes corresponding to the Internet Protocol address prefixes in the content addressable memory, and compares the codes corresponding to matching Internet Protocol address prefixes to find a longest matching Internet Protocol address prefix;

wherein comparing the codes corresponding to matching Internet Protocol address prefixes to find a longest matching Internet Protocol address prefix involves using information in the code that signifies the degree of relevance of the match thereby allowing the encoder to find more relevant matches by removing less relevant matches from consideration;

wherein finding more relevant matches by removing less relevant matches from consideration involves changing the matching status of the less relevant matches to a non-matching status.

2. (Original) The router of claim 1, further comprising:

2   a memory coupled to the encoder, the memory for storing a port number

3   corresponding to each Internet Protocol address prefix in the content addressable

4   memory and other information for routing an incoming Internet Protocol packet.

1   3. (Original) The router for claim 1, wherein the encoder includes circuitry

2   for finding one of the plurality of codes.

1   4. (Original) The router for claim 1, wherein the encoder includes circuitry

2   for deleting one of the plurality of codes.

1   5. (Original) The router of claim 1, wherein each of the plurality of codes

2   indicates a number of relevant bits in the corresponding Internet Protocol address

3   prefix.

1   6. (Original) The router of claim 5, wherein among the codes

2   corresponding to matching Internet Protocol address prefixes, a code indicating a

3   highest number of relevant bits indicates the longest matching Internet Protocol

4   address prefix.

1   7. (Original) The router of claim 5, wherein the code indicates up to 32

2   relevant bits in the corresponding Internet Protocol address prefix.

1   8. (Original) The router of claim 5, wherein the code indicates up to 128

2   relevant bits in the corresponding Internet Protocol address prefix.

1   9. (Currently amended) A method for finding a longest matching prefix for

2   an Internet Protocol address, comprising:

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3   storing Internet Protocol address prefixed in a content addressable memory

4   in an order independent of lengths of the Internet Protocol address prefixes,

5   wherein new entries are stored in the content addressable memory in random

6   order; and

7   comparing codes corresponding to matching Internet Protocol address

8   prefixes in an encoder to find a longest matching Internet Protocol address prefix;

9   wherein comparing the codes corresponding to matching Internet Protocol

10   address prefixes in an encoder to find a longest matching Internet Protocol address

11   prefix involves using information in the code that signifies the degree of relevance

12   of the match thereby allowing the encoder to find more relevant matches by

13   removing less relevant matches from consideration;

14   wherein finding more relevant matches by removing less relevant matches

15   from consideration involves changing the matching status of the less relevant

16   matches to a non-matching status.

1   10. (Original) The method of claim 9, wherein the codes indicate numbers

2   of relevant bits in the corresponding Internet Protocol address prefixes.

1   11. (Original) The method of claim 10, wherein among the codes

2   corresponding to matching Internet Protocol addresses prefixes, the code

3   indicating a highest number of relevant bits indicates the longest matching

4   Internet Protocol address prefix.

1   12-25 (Canceled).

1   26. (Currently amended) A method of operating a router, comprising:

2   receiving Internet Protocol address prefixes, wherein the Internet Protocol

3   address prefixes are stored within a content addressable memory in random order;

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4	generating codes corresponding to a number of relevant bits in the Internet
5	Protocol address prefix
6	receiving a packet with a destination Internet Protocol address;
7	comparing the destination Internet Protocol address to the Internet
8	Protocol address prefixes to find the Internet Protocol address prefixes that match
9	the destination Internet Protocol address:
10	comparing the codes corresponding to the matching Internet Protocol
11	address prefixes to find a longest matching Internet Protocol address prefix; and
12	sending the packet to a port corresponding to the longest matching Internet
13	Protocol address prefix;
14	wherein comparing the codes corresponding to matching Internet Protocol
15	address prefixes to find a longest matching Internet Protocol address prefix
16	involves using information in the code that signifies the degree of relevance of the
17	match thereby allowing the encoder to find more relevant matches by removing
18	less relevant matches from consideration;
19	wherein finding more relevant matches by removing less relevant matches
20	from consideration involves changing the matching status of the less relevant
21	matches to a non-matching status.

1   27-30 (Canceled).